

200313046-1

10/719,222

IN THE CLAIMS:

Please amend the claims as follows:

1. (currently amended) A micro-mirror device comprising:

a micro-mirror; and

a flexure spring supporting said micro-mirror, said flexure spring having supports thereon that are attached to said micro-mirror and that space said micro-mirror from said flexure spring;

wherein said flexure spring is configured to store potential energy during movement of said micro-mirror that is released as kinetic energy to drive movement of said micro-mirror when said micro-mirror is re-oriented.

2. (currently amended) The device of claim 1, wherein said flexure spring comprises:

a post;

a flexure supported on said post; and

said supports being on said flexure and attached to and supporting opposite corners of said micro-mirror.

3. (original) The device of claim 1, wherein said flexure spring comprises a piezoelectric element configured to controllably orient said micro-mirror.

4. (original) The device of claim 1, further comprising electrodes for electrostatically driving said flexure spring to controllably orient said micro-mirror.

200313046-1

10/719,222

5. (original) The device of claim 1, further comprising drive circuitry for driving said spring to orient said micro-mirror.
6. (original) The device of claim 1, wherein said flexure spring is supported on a substrate.
7. (original) The device of claim 6, wherein said substrate comprises silicon.
8. (original) The device of claim 6, wherein said substrate comprises glass or plastic.
9. (original) The device of claim 2, wherein said flexure runs diagonally between opposite corners of said micro-mirror.
10. (original) The device of claim 9, wherein said flexure has a non-uniform width.
11. (currently amended) The device of claim 2, wherein said flexure comprises a plurality of flexures extending from said post along an underside of said micro-mirror, wherein, during operation of said micro-mirror, said plurality of flexures contact said micro-mirror and store energy due to movement of said micro-mirror.

200313046-1

10/719,222

12. (original) The device of claim 2, wherein said supports have a square shape, with corners of said supports being matched with corners of said micro-mirror.

13. (currently amended) An array of micro-mirrors comprising:
a plurality of micro-mirrors; and
a flexure spring supporting each said micro-mirror, each said flexure spring having supports thereon that are attached to a corresponding micro-mirror;

wherein each said flexure spring is configured to store potential energy during movement of a corresponding micro-mirror that is released as kinetic energy to drive movement of said corresponding micro-mirror when said corresponding micro-mirror is re-oriented.

14. (currently amended) The array of claim 13, wherein each said flexure spring comprises:

a post;
a flexure supported on said post; and
said supports being on said flexure and attached to and supporting opposite corners of said micro-mirror.

15. (original) The array of claim 13, wherein each said flexure spring comprises a piezoelectric element configured to controllably orient said corresponding micro-mirror.

200313046-1

10/719,222

16. (original) The array of claim 13, wherein each said flexure spring has a corresponding set of electrodes for electrostatically driving said that flexure spring to controllably orient said corresponding micro-mirror.

17. (original) The array of claim 13, further comprising drive circuitry for driving said springs to orient said micro-mirrors in response to incoming image data.

18. (original) The array of claim 13, wherein said array of micro-mirrors is formed and supported on a substrate.

19. (original) The array of claim 18, wherein said substrate comprises silicon.

20. (original) The array of claim 18, wherein said substrate comprises glass or plastic.

21. (previously presented) The array of claim 14, wherein said flexure runs diagonally between opposite corners of said corresponding micro-mirror.

22. (original) The array of claim 21, wherein said flexure has a non-uniform width.

23. (currently amended) The array of claim 14, wherein said flexure comprises a plurality of flexures extending from said post along an underside of said corresponding micro-mirror, wherein, during operation of said array, said plurality of flexures contact said

200313046-1

10/719,222

corresponding micro-mirror and store energy due to movement of said corresponding micro-mirror.

24. (original) The array of claim 14, wherein said supports have a square shape, with corners of said supports being matched with corners of said corresponding micro-mirror.

25-30. (cancelled)

31. (previously presented) A spatial light modulation device comprising:
a micro-mirror; and
a pliant flexure supporting said micro-mirror, said flexure having a bias;
wherein said flexure stores energy due to said bias in response to any re-positioning of said micro-mirror away from a default orientation; and
wherein said flexure releases said stored energy to drive movement of said micro-mirror when a force against said bias is relaxed.

32. (previously presented) The device of claim 31, wherein said flexure holds said micro-mirror in said default orientation according to said bias when said flexure is not driven.

33. (original) The device of claim 31, wherein said pliant flexure comprises:
a post;
a flexure member supported on said post; and
supports on said flexure member for supporting said micro-mirror.

200313046-1

10/719,222

34. (original) The device of claim 31, wherein said pliant flexure comprises a piezoelectric element configured to bend said pliant flexure to controllably orient said micro-mirror.

35. (original) The device of claim 31, further comprising a set of electrodes for electrostatically driving said pliant flexure to controllably orient said micro-mirror.

36. (original) The device of claim 31, further comprising drive circuitry for driving said flexure to orient said micro-mirror.

37. (original) The device of claim 33, wherein said flexure runs diagonally between opposite corners of said micro-mirror.

38. (original) The device of claim 37, wherein said flexure has a non-uniform width.

39. (currently amended) The device of claim 33, wherein said flexure comprises a plurality of flexures extending from said post along an underside of said micro-mirror, wherein, during operation of said micro-mirror, said plurality of flexures contact said micro-mirror and store energy due to movement of said micro-mirror.

40. (previously presented) The device of claim 31, further comprising a plurality of micro-mirrors arranged in an array.

200313046-1

10/7/19,222

41-46. (cancelled)

47. (currently amended) A micro-mirror device comprising:

a micro-mirror; and

a flexure spring, wherein said micro-mirror is supported exclusively on arms of said flexure spring, with supports connected between said arms and opposite corners of said micro-mirror,

wherein said flexure spring comprises a plurality of flexures disposed side-by-side, substantially parallel to each other and extending ~~between~~ toward opposite corners of said micro-mirror, ~~normal to an axis about which said micro-mirror tilts;~~

wherein said flexure spring is configured to store potential energy during movement of said micro-mirror that is released as kinetic energy to drive movement of said micro-mirror when said micro-mirror is re-oriented.

48. (previously presented) The device of claim 47, wherein said supports have a square cross-section with corners of said supports being matched to said opposite corners of said micro-mirror.

49. (previously presented) The device of claim 47, wherein said plurality of flexures are unconnected arms extending from a central portion.

50. (previously presented) The device of claim 47, wherein said plurality of flexures comprises:

200313046-1

10/719,222

a flexure having said supports thereon connected to and for supporting said micro-mirror; and

at least one other flexure which only applies force to said micro-mirror when said micro-mirror tilts about said axis into contact with said at least one other flexure.

51. (previously presented) The device of claim 47, wherein said flexure spring is supported on a substrate in a dielectric liquid disposed on said substrate.

52. (currently amended) The device of claim 47, wherein ~~[[an]]~~ any re-positioning of said micro-mirror away from a default position is resisted by a bias of said flexure spring.

53. (new) A micro-mirror device comprising:
a micro-mirror; and
a flexure spring, wherein said micro-mirror is supported on arms of said flexure spring, with supports connected between said arms and opposite corners of said micro-mirror, said supports spacing said micro-mirror from said arms of said flexure spring,

wherein said flexure spring comprises a plurality of flexures disposed substantially parallel to each other and extending toward opposite corners of said micro-mirror, where movement of said micro-mirror brings said micro-mirror into contact with at least some of said plurality of flexures which then flex and store energy due to continued movement of said micro-mirror toward those flexing flexures;

200313046-1

10/719,222

wherein said flexure spring is configured to store potential energy during movement of said micro-mirror that is released as kinetic energy to drive movement of said micro-mirror when said micro-mirror is re-oriented.